(54) Title: SYNTHETIC NERVOUS SYSTEM FOR ROBOTICS
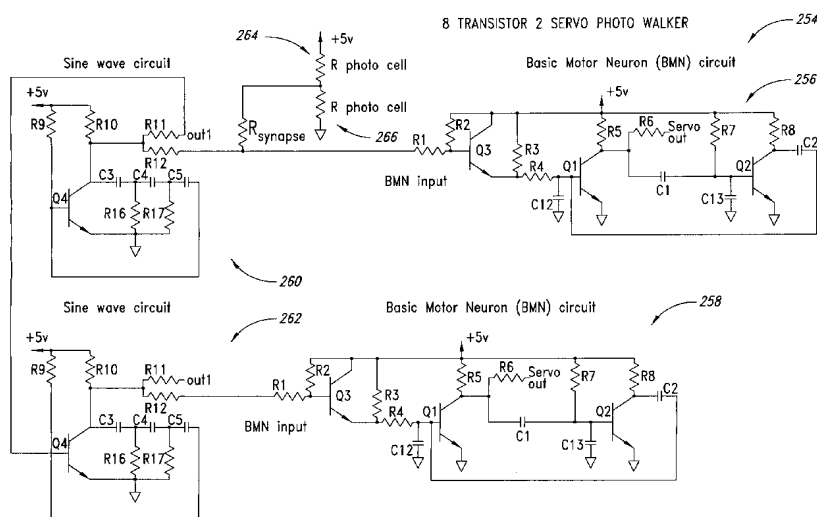
(57) Abstract: A synthetic nervous system capable of rudimental learning and self-organization for robotic applications having a control circuit and servo actuators using oscillating continuously variable analog voltages to mimic natural bio-neural processes. Simple oscillators capable of being modulated in frequency, phase, amplitude, and DC offset act as analog processing elements or oscillating infinite state machines. A central pattern generator utilizing periodic, quasi-periodic, or chaotic oscillators or phase shifters, or a combination thereof, along with a basic motor neuron circuit enables multiple servos to coordinate their behavior to enable bio-inspired locomotion such as walking, swimming, flapping, crawling, and the like. Sensors interfaced to the control circuit provide a wide range of adaptive behavior such as following a light source, avoiding an obstacle, and shifting balance point. Overlapping or concurrent sensor inputs can provide complex behavior with minimal circuitry.